May 10, 2011

Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: ET Docket No. 08-59, Amendment of the Commission's Rules to Provide Spectrum for the Operation of Medical Body Area Networks

Dear Ms. Dortch,

This written *ex parte* filing is being submitted by Philips Healthcare ("Philips") and GE Healthcare ("GEH"). On January 13, 2011, Philips, GEH and the Aerospace Flight Test Radio Coordinating Council ("AFTRCC") (together referred to herein as the "Joint Parties") presented a proposal to Commission staff for resolving the issues raised in this proceeding, and on March 2, 2011, the Joint Parties met with Commission staff to further discuss the proposal. As indicated in the Joint Parties' *ex parte* filing dated March 3, the Joint Parties undertook meetings to further discuss certain issues after the Commission staff meeting. This filing is being made for the purpose of submitting the results of these discussions. Most of the issues addressed herein relate to medical device matters of primary concern to Philips and GEH. Nevertheless, Philips and GEH provided a copy of this letter to AFTRCC for its review, and AFTRCC has advised that, in its view, the letter furthers adoption of the compromise approach for MBANS that the Joint Parties have submitted to the Commission.

**A. 40 MHz is Needed for MBANS to Work While Minimizing Conflict**

In earlier filings AdvaMed, GEH, and Philips addressed the need for allocation of at least 40 MHz on a secondary basis. As AdvaMed stated, "a full 40 MHz allocation . . . provides the most effective solution to meet the medical needs while allowing for [the] best opportunity for coexistence of this secondary service with the primary users."[1] Existing primary users that must be considered in achieving coexistence include AMT, Amateur and WCS (operating in an adjacent spectrum band). A 40 MHz secondary MBANS allocation would "make it much easier for MBAN systems to coexist with [the] other systems," and "[t]he possibility of finding clear spectrum [for MBANS operations would be] greatly enhanced."[2] GEH noted, a 40 MHz secondary allocation "would maximize the likelihood of MBANS devices being able to operate reliably across all conceivable scenarios in the vast majority of hospitals."[3]

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[1] AdvaMed Comments at 1 (Oct. 5, 2009).
[2] *Id.* at 8.
[3] GE Healthcare Comments at 9 (Oct. 5, 2009).

Considerations that lead to a 40 MHz requirement include "peak MBANS device densities that could [occur in] certain [health care settings], likely protocol overhead,[4] contention protocol inefficiencies (e.*g.*, collision rates, etc.) and modulation spectral efficiency." Moreover, "Philips envisions that in some cases, such as waiting areas of [e]mergency rooms . . . , elevator lobbies, preparatory areas for imaging services[,] etc., multiple patients with active MBANS sensors could gather and frequency coordination and/or contention-based protocols would be required to coordinate the distributed MBANS operations to avoid interference among MBANS devices."[5] Because primary operations already exist on the spectrum at issue, and under the Joint Proposal MBANS device use would have to be coordinated with AMT operations in the 2360-2390 MHz band, a secondary allocation of the entire 40 MHz is needed to ensure that sufficient spectrum is *available* and *usable* at a given health care facility for MBANS device use. Such an allocation should allow medical device vendors to support MBANS operations even in those health care settings where very high patient densities are expected. A contiguous spectrum allocation would enable more efficient spectrum use and simplify implementation. A 40 MHz allocation would also allow for an evolution in MBANS technology to meet growing future needs in medical monitoring, offering the possibility for new innovations not even conceived of today.

A 40 MHz allocation also would promote the viability of the parties' proposed coordination approach to MBANS operations in the 2360-2390 MHz band. Under the proposal, Line-of-Sight ("LoS") health care facilities not satisfying the AMT protection criteria could still access for MBANS use those portions of the 2360-2390 MHz band that are not being used at their particular locations by LoS AMT site(s). Because the frequencies available in such situations will vary from location to location, the entire 40 MHz must be allocated to MBANS use to ensure that an adequate amount of spectrum will be *available* and *usable* in such instances.[6] In this sense, the possible availability of 40 MHz would make a secondary allocation for this type of medical application much more viable than would be the case if a lesser amount of spectrum were allocated.

A full 40 MHz allocation also would minimize costs for the MBANS devices because it would support leverage of existing radios and technologies from neighboring ISM/unlicensed spectrum. This will provide the best possibility to have MBANS devices from competing

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[4] For example, frame sync preambles, media access control ("MAC") layer information, error detection and correction schemes, etc. *Id.*

[5] Philips Comments at 6 (Oct. 5, 2009).

[6] *See* Philips Comments at 5 ("A full 40 MHz allocation maximizes opportunities to avoid interference to and from the primary users of spectrum while accommodating substantial use for MBANS devices. The less spectrum allocated, the more difficult it will be to avoid interference, whereas the full 40 MHz of spectrum will maximize opportunities to avoid interference through frequency separation, support the coexistence of multiple and competitive MBANS networks, and provide the spectrum needed for future innovation." ).

manufacturers at the lowest attainable cost points. Lowest cost, of course, is an essential factor to bring better health care to patients at sustainable rates.

### B. Certification of MBANS Devices

FCC certification of MBANS devices should be by the submission of an attestation during the equipment authorization process for aspects such as contention protocols and the beacon/e-key function. Such an attestation would explain how the function is provided and tested. For testing purposes, whether by the manufacturer, TCB, or FCC, certification of the beacon/e-key would be facilitated by the MBANS coordinator upon request by creating a short duration test-key with a life of 1-4 hours so that the tester could confirm that the MBANS device under test can only operate after download of the key.

The attestation of contention protocols should define the mechanism used for spectrum management and describe the manner by which channels are selected and occupied. The contention protocol attestation should clearly define the mechanisms by which the MBANS device enables sharing of the allocated spectrum with other MBANS devices with respect to temporal duty cycle and frequency selection and occupation.

Relying on attestations, rather than adopting detailed prescriptive requirements in the rules, is necessary to allow for future technological innovation.[7] Additionally, it should be recognized that, at least initially, MBANS devices are expected to be composed of a combination of existing technology building blocks incorporated in an IEEE 802.15-series standard. Such IEEE 802.15 series standards are developed to maximize sharing, and routinely undergo FCC certification within existing devices (such as Zigbee 802.15.4) or combined with other radio devices (such as WiFi 802.11-series devices and Bluetooth 802-15 series). Therefore, MBANS devices should not present new and novel evaluation issues during the equipment authorization process.

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[7] For example, the LBT frequency monitoring defined for the MedRadio service is ill-suited to the use of MBANS devices within an ambulatory patient environment. The MedRadio service's LBT 10 msec may be much longer than the time for a MBANS transmitter to send a data message at a 1 Mbps data rate. Furthermore, the 5 second silent period that ends a MedRadio communication session and requires a new LBT activity for subsequent communication sessions can negatively impact real-time alarming systems that must meet specific alarm delay limits in medical alarm standards. The medical alarm standards evolve over time; flexibility is needed to design for these critical standards. Applications exist whereby a network of MBANS devices would sleep in a silent, battery saving mode for five or more seconds. A requirement to perform LBT for each wake-up could add significant complexity for MBANS devices having to re-discover the operating frequency channel each time they awaken. For these reasons, the parties to this filing that seek to develop MBANS devices prefer that the Commission issue generic technical rules.

### C. MBANS Coordinator Requirements

MBANS coordination should be viewed as an extension of the WMTS coordination activities for health care facilities, but with the electronic key providing improved enforcement capabilities. A single coordinator, as currently is the situation for both WMTS and AMT, would simplify the coordination process, reduce the costs of coordination, and expedite the deployment of MBANS equipment. A single MBANS coordinator would allow MBANS equipment users, medical device vendors, and AFTRCC to have a single point of contact for obtaining all of the information they need regarding potential frequency conflicts. If there were multiple coordinators, there would have to be a high degree of cooperation among them, and significant effort would have to be undertaken to ensure that each MBANS coordinator, at all times, had a complete and up-to-date database; any lapses in communication among coordinators could result in harmful interference to AMT operations, thereby potentially jeopardizing flight test data integrity. Compared to a single MBANS coordinator, a multiple coordinator scheme could result in higher coordination costs, and hence higher coordination fees, because the costs incurred by any given coordinator would be spread across a smaller base of users and each coordinator would incur additional costs necessitated by the existence of other coordinators.

As AFTRCC's representatives indicated during the meeting between the Joint Parties and Commission staff on March 2, it is currently the single coordinator of this spectrum, and believes that working with multiple medical coordinators would be overly burdensome and would make it more difficult to meet the response time limits defined in the proposal to manage interference issues or changes at AMT sites or health care facilities.

The following is a summary of suggested key requirements for an MBANS coordinator.

- Shall have proven history of effective coordination with medical wireless systems.
- Shall have experience working with hospitals and medical device vendors.
- Shall have institutional knowledge of the health care industry in general, understand the needs of hospitals, and advocate for their needs.
- Shall have the MBANS user community as part of its core constituency.
- Shall have experience using accepted electronic propagation tools to aid coordination.
- Shall have the ability to make on-site measurements to determine if a site is likely to interfere with AMT operations.
- Must be willing to develop the MBANS database with electronic key enforcement, ideally leveraging the WMTS database in partnership with medical device vendors.
- Shall have ready access to health care facility location information and databases to manage coordination.
- Must maintain the MBANS database, its communications access, and view this as part of health care facilities' infrastructure.

- Shall be willing to operate the coordination process and MBANS database at cost, ideally on a non-profit basis.
- Shall have a history of effectively working with AFTRCC.
- Shall be willing to enter into a spectrum coordination agreement with AFTRCC and execute FCC and related coordination rules in good faith.

Pursuant to Section 1.1206 of the Commission's rules, this letter is being electronically filed with your office. If you have any questions, please contact the undersigned.

Respectfully submitted,

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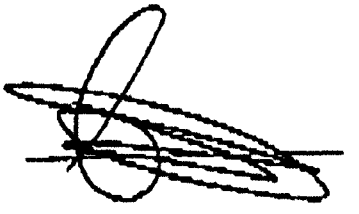

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